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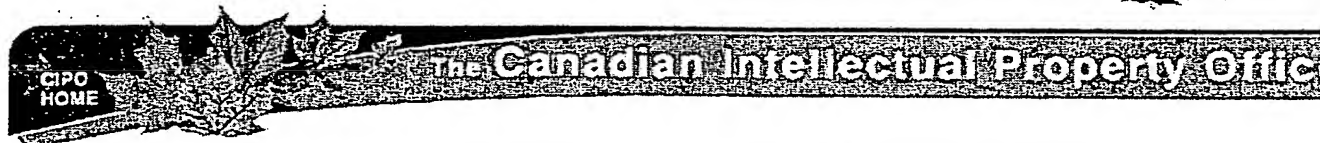
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(12) Patent Application:

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(54) FOOD CLEANING COMPOSITIONS CONTAINING CYCLODEXTRIN

(54) COMPOSITIONS DE NETTOYAGE DES ALIMENTS RENFERMANT DE LA CYCLODEXTRINE

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ABSTRACT:

The presente invention relates to a stable, preferably aqueous, food cleaning composition, preferably for use on produce and/or food contact surfaces. The composition typically comprises from about 0.1 % to about 20 %, by weight of the composition, of solubilized, water-soluble, uncomplexed cyclodextrin and an effective amount of at least one ingredient to improve the performance of the composition selected from the group consisting of: (1) cyclodextrin compatible surfactant; (2) cyclodextrin compatible antimicrobial active; and (3) mixtures thereof. Optional hydrophilic perfume improves acceptance. Optionally, the composition can contain low molecular weight polyols; metallic salts to help control odor; etc. The composition is preferably essentially free of any material that is not food compatible. The composition is preferably applied as small particle size droplets, especially from spray containers. The surfactant/antibacterial active combination, provides improved antimicrobial activity.

CLAIMS: [Show all claims](#)

*** Note: Data on abstracts and claims is shown in the official language in which it was submitted.

(72) [Inventors](#) (Country):

WOLFF, ANN MARGARET (United States)
COBB, DANIEL SCOTT (United States)
WARD, THOMAS EDWARD (United States)
BURNS, ANTHONY JAMES (United States)
SCHNEIDERMAN, EVA (United States)
STREUTKER, ALEN DAVID (United States)
TRINH, TOAN (United States)
ROSELLE, BRIAN JOSEPH (United States)
CHUNG, ALEX HAEJOON (United States)
WOO, RICKY AH-MAN (United States)
CAMPBELL, WILLIAM TUCKER (United States)

ROSENBALM, ERIN LYNN (United States)

(73) Owners (Country): **THE PROCTER & GAMBLE COMPANY** (United States)(71) Applicants (Country): **THE PROCTER & GAMBLE COMPANY** (United States)(74) Agent: **KIRBY EADES GALE BAKER**(45) Issued:(22) Filed: **June 9 , 1998**(43) Laid Open: **Dec. 17, 1998**Examination requested: **Dec. 8 , 1999**(51) International Class (IPC): **A23P 1/00 C11D 3/22**Patent Cooperation Treaty (PCT): **Yes**

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- (72) WOO, RICKY AH-MA, US
(72) TRINH, TOAN, US
(72) COBB, DANIEL SCOTT, US
(72) SCHNEIDERMAN, EVA, US
(72) WOLFF, ANN MARGARET, US
(72) WARD, THOMAS EDWARD, US
(72) CHUNG, ALEX HAEJOON, US
(72) ROSELLE, BRIAN JOSEPH, US
(72) CAMPBELL, WILLIAM TUCKER, US
(72) SREUTKER, ALEN DAVID, US
(72) BURNS, ANTHONY JAMES, US
(71) THE PROCTER & GAMBLE COMPANY, US
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(54) **COMPOSITIONS DE NETTOYAGE DES ALIMENTS
RENFERMANT DE LA CYCLODEXTRINE**
(54) **FOOD CLEANING COMPOSITIONS CONTAINING
CYCLODEXTRIN**

(57) La présente invention concerne une composition stable, de préférence aqueuse, destinée à nettoyer les aliments, et de préférence utilisée sur les surfaces de fruits et légumes frais et/ou d'aliments. Cette composition renferme généralement environ 0,1 % à 20 %, en poids de la composition de cyclodextrine solubilisée hydrosoluble non complexée, ainsi qu'une quantité efficace d'au moins un ingrédient destiné à améliorer l'efficacité de ladite composition. Cet ingrédient est choisi dans le groupe composé par: 1) un tensioactif compatible avec la cyclodextrine; 2) un agent actif bactéricide compatible avec la cyclodextrine; et 3)

(57) The presente invention relates to a stable, preferably aqueous, food cleaning composition, preferably for use on produce and/or food contact surfaces. The composition typically comprises from about 0.1 % to about 20 %, by weight of the composition, of solubilized, water-soluble, uncomplexed cyclodextrin and an effective amount of at least one ingredient to improve the performance of the composition selected from the group consisting of: (1) cyclodextrin compatible surfactant; (2) cyclodextrin compatible antimicrobial active; and (3) mixtures thereof. Optional hydrophilic perfume improves acceptance. Optionally, the composition can



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des mélanges de ceux-ci. Un parfum hydrophile peut permettre d'améliorer l'acceptation de cette composition. Celle-ci renferme éventuellement des polyols à faible poids moléculaire, des sels métalliques contribuant à éliminer les odeurs, etc. Cette composition est de préférence sensiblement exempte de toute substance non compatible avec les aliments, et idéalement appliquée sous la forme de gouttelettes de dimension granulométrique réduite, notamment à partir de pulvérisateurs. La combinaison tensioactif/agent actif bactéricide présente une activité antimicrobienne améliorée.

contain low molecular weight polyols; metallic salts to help control odor, etc. The composition is preferably essentially free of any material that is not food compatible. The composition is preferably applied as small particle size droplets, especially from spray containers. The surfactant/antibacterial active combination, provides improved antimicrobial activity.





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FOOD CLEANING COMPOSITIONS CONTAINING CYCLODEXTRIN

COMPOSITIONS DE NETTOYAGE DES ALIMENTS RENFERMANT DE LA
CYCLODEXTRINE

CLAIMS:

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WHAT IS CLAIMED IS:

1. A food cleaning composition comprising:
 - A. an effective amount to absorb unwanted organic molecules of solubilized, uncomplexed cyclodextrin, optionally either a. beta-cyclodextrin; b. methylated beta-cyclodextrin; c. a mixture of methylated alpha-cyclodextrin and methylated beta-cyclodextrin; d. hydroxypropyl beta-cyclodextrin; e. mixture of hydroxypropyl alpha-cyclodextrin and hydroxypropyl beta-cyclodextrin ; f. selected from the group consisting of beta-cyclodextrin, alpha-cyclodextrin, gamma-cyclodextrin, derivatives of said cyclodextrins, and mixtures thereof, said derivatives optionally being selected from the group consisting of methyl substituted cyclodextrins, ethyl substituted cyclodextrins, hydroxyalkyl substituted cyclodextrins, branched cyclodextrins, cationic cyclodextrins, quaternary ammonium cyclodextrins, anionic cyclodextrins, amphoteric cyclodextrins, cyclodextrins wherein at least one glucopyranose unit has a 3-6-anhydro-cyclomalto structure; or g. mixtures thereof;
 - B. optionally, an effective amount to improve the performance of the composition, of cyclodextrin compatible surfactant;
 - C. optionally, an effective amount, to kill, or reduce the growth of microorganisms, of cyclodextrin compatible and water soluble antimicrobial active;
 - D. optionally, an effective amount of sequestrant/builder to improve cleaning;
 - E. optionally, an effective amount to improve acceptance of the composition of hydrophilic perfume containing at least about 50% by weight of the perfume of ingredients having a ClogP of less than about 3.5 and, optionally, a minor

amount of perfume ingredients selected from the group consisting of ambrox, bacdanol, benzyl salicylate, butyl anthranilate, cetalo, damascenone, alpha-damascone, gamma-dodecalactone, ebanol, herbavert, cis-3-hexenyl salicylate, alpha-ionone, beta-ionone, alpha-isomethylionone, lillal, methyl nonyl ketone, gamma-undecalactone, undecylenic aldehyde, and mixtures thereof;

F. optionally, from about 0.01% to about 3% by weight of the composition of low molecular weight polyol;

G. optionally, from about 0.001% to about 0.3% by weight of the composition of aminocarboxylate chelator;

H. optionally, an effective amount to reduce foaming, of antifoaming agent;

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I. optionally, an effective amount of metallic salt for improved odor benefit;

J. optionally, an effective amount of enzyme for improved cleaning and odor control benefit;

K. optionally, an effective amount of solubilized, water-soluble, antimicrobial preservative;

L. optionally, an effective amount of adjunct odor-controlling ingredients selected from the group consisting of alkali carbonate and bicarbonate salts, low molecular weight water soluble ionic polymers, and mixtures thereof; and

M. aqueous carrier, said composition containing at least one of (B) and (C), and containing, essentially, only ingredients which are food compatible, and/or preferably having a pH of more than about 3, more preferably more than about 3.5, said composition optionally being packaged in a container that is capable of dispensing said composition as either

1) small droplets having a weight average diameter of from about 10 μ m to about

120 μ m. and/or 2) a foam, said container optionally being part of an article of manufacture which also comprises non-manually operated spray means, and/or said composition being packaged in association with instructions to use it to clean and/or deodorize food and/or food contact surfaces.

2. The composition of Claim 1 wherein either a. said cyclodextrin is present at a level of from about 0.01 % to about 20% by weight of the composition and said surfactant is present at a level of from about 0.01% to about 15% by weight of the composition; b. said cyclodextrin is present at a level of from about 0.01% to about


5% by weight of the composition and said surfactant is present at a level of from about 0.03% to about 4% by weight of the composition; c. said cyclodextrin is present at a level of from about 0.1% to about 3%, by weight of the composition and said surfactant is present at a level of from about 0.05% to about 3% by weight of the composition; or d. said cyclodextrin is present at a level of from about 0.5% to about 2%, by weight of the composition and said surfactant is present at a level of from about 0.1% to about 2% by weight of the composition.

3. The composition of Claim 1 or Claim 2 wherein said surfactant is present in an effective amount, optionally to provide a surface tension of from about 20 dyne/cm to about 45 dyne/cm, and is optionally selected from the group consisting of: block copolymers of ethylene oxide and propylene oxide, optionally a block copolymer of ethylene oxide and propylene oxide based on ethylene glycol, propylene glycol,

58 glycerol, trimethylolpropane, ethylenediamine, or mixtures thereof as the initial reactive hydrogen compound, or surfactant which has the general formula

$H(EO)_n(PO)_m(EO)_nH$, wherein EO is an ethylene oxide group, PO is a propylene oxide group, n and m are numbers that indicate the average number of the groups in the surfactants, n ranges from about 2 to about 100, and m ranges from about

10 to about 100; polyalkyleneoxide polysiloxanes, optionally polyalkyleneoxide polysiloxane having the general formula:

$R1 \sim (CH_3)_2SiO \sim [(CH_3)_2SiO]_a \sim [(CH_3)(R1)SiO]_b \sim Si(CH_3)_2 \sim R1$ wherein a + b are from about 1 to about 50, and each R1 is the same or different and is selected from the group consisting of methyl and a poly (ethyleneoxide/propyleneoxide) copolymer group having the general formula: $-(CH_2)_n O(C_2H_4O)_c (C_3H_6O)_d R2$ with at least one R1 being a poly (ethyleneoxide/propyleneoxide) copolymer group, and wherein n is 3 or 4, total c for all polyalkyleneoxy side groups has a value of from 1 to about 100, d is from 0 to about 14, c+d has a value of from about 5 to about 150, and each R2 is the same or different and is selected from the group consisting of hydrogen, an alkyl having 1 to 4 carbon atoms, and an acetyl group; alkyl diphenyl oxide disulfonate anionic surfactants, having the general formula:  wherein R is an alkyl group; and mixtures thereof.

4. The composition of any of Claims 1-3 wherein said antimicrobial active is selected from the group consisting of: bis-biguanide alkane water soluble salt selected from the group consisting of: chlorides, bromides, sulfates, alkyl sulfonates, phenylsulfonates p-methylphenyl sulfonates, nitrates, acetates, gluconates, and mixtures thereof at a level of from about 0.001 % to about 0.4% by weight of the composition, optionally bis-biguanide alkane water soluble salt at a level of from about 0.05% to about 0.2% by weight of the composition that is selected from the group consisting of: chlorhexidine; (1)

1,6-bis-(2-ethylhexylbiguanidohexane)dihydrochloride; 1,6-di-(N1,N1'-phenyldiguanido-N5,N5')-hexane tetrahydrochloride; 1,6-di-(N1,N1'-phenyl-N1,N1'-methyldiguanido-

59 N5,N5')-hexane dihydrochloride; 1,6-di(N1,N1'-o-chlorophenyldiguanido-N5,N5')-hexane dihydrochloride; 1,6-di(N1,N1'-2,6-dichlorophenyldiguanido-N5,N5')hexane dihydrochloride; 1,6-di[N1,N1'-.beta.-(p-methoxyphenyl) diguanido-N5,N5']-hexane dihydrochloride; 1,6-di(N1,N1'-.alpha.-methyl-.beta.-phenyldiguanido-N5,N5')-hexane dihydrochloride; 1,6-di(N1,N1'-p-nitrophenyldiguanido-N5,N5')hexane dihydrochloride;.omega.:omega.'-di-(N1,N1'-phenyldiguanido-N5,N5')-di-n-propylether dihydrochloride;.omega.:omega'-di(N1,N1'-p-chlorophenyldiguanido-N5,N5')-di-n-propylether tetrahydrochloride; 1,6-di(N1,N1'-2,4-dichlorophenyldiguanido-N5,N5')hexane tetrahydrochloride; 1,6-di(N1,N1'-p-methylphenyldiguanido-N5,N5')hexane dihydrochloride; 1,6-di(N1,N1'-2,4,5-trichlorophenyldiguanido-N5,N5')hexane tetrahydrochloride; 1,6-di[N1,N1'-.alpha.-

(p-chlorophenyl) ethyldiguanido-N5,N5'] hexane dihydrochloride;.omega.:omega.'-di(N1,N1'-p-chlorophenyldiguanido-N5,N5') m-xylene dihydrochloride; 1,12-di(N1,N1'-p-chlorophenyldiguanido-N5,N5') dodecane dihydrochloride; 1,10-di(N1,N1'-phenyldiguanido-N5,N5')-decane tetrahydrochloride; 1,12-di(N1,N1'-phenyldiguanido-N5,N5') dodecane

tetrahydrochloride; 1,6-di(N1,N1'-o-chlorophenyldiguanido-N5,N5') hexane dihydrochloride; 1,6-di(N1,N1'-p-chlorophenyldiguanido-N5,N5')-hexane tetrahydrochloride; ethylene bis (1-tolyl biguanide); ethylene bis (p-tolyl biguanide); ethylene bis(3,5-dimethylphenyl biguanide); ethylene bis(p-tert-amylphenyl biguanide); ethylene bis(nonylphenyl biguanide); ethylene bis (phenyl biguanide); ethylene bis (N-butylphenyl biguanide); ethylene bis (2,5-diethoxyphenyl biguanide); ethylene bis(2,4-dimethylphenyl biguanide); ethylene bis(o-diphenylbiguanide); ethylene bis(mixed amyl naphthyl biguanide); N-butyl ethylene bis(phenylbiguanide); trimethylene bis(o-tolyl biguanide); N-butyl trimethylene bis(phenyl biguanide); and the corresponding pharmaceutically acceptable salts of all of the above such as the acetates; gluconates; hydrochlorides; hydrobromides; citrates; bisulfites; fluorides; polymaleates; N-coconutalkylsarcosinates; phosphites; hypophosphites; perfluorooctanoates; silicates; sorbates; salicylates; maleates; tartrates; fumarates; ethylenediaminetetraacetates; iminodiacetates; cinnamates; thiocyanates; arginates; pyromellitates; tetracarboxybutyrates; benzoates; glutarates; monofluorophosphates; and perfluoropropionates, and mixtures thereof, optionally chlorhexidine.

5. The composition of any of Claims 1-3 wherein said antimicrobial active is present and is quaternary ammonium compound, optionally selected from the group consisting of: benzalkonium chlorides; substituted benzalkonium chlorides; di(C6-C14)alkyl ammonium salt; N-(3-chloroallyl) hexaminium chloride; benzethonium

chloride; methylbenzethonium chloride; cetylpyridinium chloride; and mixtures thereof, at a level of either from about 0.001% to about 0.8%, or from about 0.001% to about 0.4%, or from about 0.01% to about 0.3%, or from about 0.05% to about 0.2%, by weight of the composition.

5. The composition of any of Claims 1-4 additionally comprises at least one of D.- L.

6. A stable, aqueous food cleaning composition, optionally clear, comprising:

- A. an effective amount to absorb malodors of solubilized, uncomplexed cyclodextrin;
- B. an effective amount to improve the performance of the composition, of cyclodextrin compatible surfactant;
- C. an effective amount, to kill, or reduce the growth of microbes, of cyclodextrin compatible and water soluble antimicrobial active;
- D. optionally, an effective amount of sequestrant/builder to improve cleaning;
- E. optionally, an effective amount to improve acceptance of the composition of hydrophilic perfume containing at least about 50% by weight of the perfume of ingredients having a ClogP of less than about 3.5 and, optionally, a minor amount of perfume ingredients selected from the group consisting of ambrox, bacdanol, benzyl salicylate, butyl anthranilate, cetalex, damascenone, alpha-damascone, gamma-dodecalactone, ebanol, herbavert, cis-3-hexenyl salicylate, alpha-ionone, beta-ionone, alpha-isomethylionone, lilial, methyl nonyl ketone, gamma-undecalactone, undecylenic aldehyde, and mixtures thereof;
- F. optionally, from about 0.01 % to about 3% by weight of the composition of low molecular weight polyol;
- G. optionally, from about 0.001 % to about 0.3% by weight of the composition of aminocarboxylate chelator;
- H. optionally, an effective amount to reduce foaming, of antifoaming agent;
- I. optionally, an effective amount of metallic salt for improved odor benefit;

- J. optionally, an effective amount of enzyme for improved cleaning and odor control benefit;
- K. optionally, an effective amount of solubilized, water-soluble, antimicrobial preservative;

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- L. optionally, an effective amount of adjunct odor-controlling ingredients selected from the group consisting of alkali carbonate and bicarbonate salts, low molecular weight water soluble ionic polymers, and mixtures thereof; and
- M. aqueous carrier, wherein the combination of (B). and (C). provides improved antimicrobial activity.

7. The composition of any of Claims 1-6 additionally containing at least one of:
- (1) from about 0.01% to about 3%, by weight of the composition, of low molecular weight polyol selected from the group consisting of: glycerol; ethylene glycol; propylene glycol; diethylene glycol; dipropylene glycol; or mixtures thereof;
 - (2) an effective amount of polyanionic acid or alkali metal salt thereof, having an average molecular weight of less than about 20,000, said polyanionic acid or alkali metal salt thereof optionally being from about 0.001% to about 3% by weight of the composition of said polyacrylic acid or alkali metal salt thereof, having an average molecular weight of less than about 5,000;
 - (3) from about 0.001% to about 0.8% by weight of the composition of quaternary compounds containing two C1-4 alkyl and/or hydroxy alkyl groups and two C6-14 alkyl groups;
 - (4), an effective amount of enzyme for improved cleaning and odor control benefit; and
 - (5) from about 1% to about

20% ethanol.

8. An article of manufacture comprising the composition of any of Claims 1-7 in a spray dispenser, said spray dispenser optionally comprising a trigger spray device that is capable of providing droplets with a weight average diameter of from about 10 to about 120 μm .; a pressurized aerosol spray dispenser; or a non-manually operated spray dispenser optionally selected from the group consisting of: powered sprayer; air aspirated sprayer; liquid aspirated sprayer; electrostatic sprayer; and nebulizer sprayer.

9. The article of manufacture of Claim 8 wherein said spray dispenser is capable of dispensing said composition as a foam.

10. An article of manufacture comprising the composition of any of Claims 1-7 in association with instructions to use it to clean food and/or food contact surfaces by applying it evenly to the surface of said food and/or food contact surfaces and then rinsing said surfaces.

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11. The method of cleaning food and/or food preparation surfaces comprising spraying an effective amount of the composition of any of Claims 1-7 onto said surface using either a trigger-spray device optionally forming droplets of the spray have a weight average diameter of from about 10 to about 120 μm ., or a pressurized aerosol spray dispenser; or a non-manually operated spray dispenser optionally selected from the group consisting of: powered sprayer; air aspirated sprayer; liquid aspirated sprayer; electrostatic sprayer; and nebulizer sprayer

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